AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-9 (Previously Canceled)

Claim 10 (Currently Amended): A method for measuring of an electrical complex impedance of an object using periodic non sine wave signals, the method comprising:

applying an excitation signal to the object; ~~and~~

measuring a response signal from the object to the excitation signal using synchronous demodulation, wherein both the excitation signal and a reference signal driving a synchronous detector are generated from a rectangular wave, and both the excitation signal and the reference signal have an upper constant value section~~s~~ and a lower constant value section, and wherein at least either said excitation signal or said reference signal is modified compared to said rectangular wave so that said upper constant value section~~s~~ and said lower value section of such first modified signal are in each period symmetrically shortened by a predetermined first time interval, during which said first modified signal has a third ~~different~~ constant value that is smaller than ~~from the~~ said upper constant value and bigger than said lower constant value, thereby suppressing a first set of odd higher harmonics in ~~constant value sections of~~ said first modified signal; and

calculating a complex impedance of the object proportional to an output signal from said synchronous detector.

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Claim 11 (Currently Amended): The method according to claim 10, wherein said predetermined first time interval is selected so that the first set of odd higher harmonics include the 3rd harmonic of said first modified signal ~~is suppressed~~.

Claim 12 (Previously Amended): The method according to claim 11, wherein said predetermined first time interval equals to about approximately $\pi/6$.

Claim 13 (Currently Amended): The method according to claim 10, wherein the other signal of said excitation signal and said reference signal is also modified so that at least one of said upper ~~the~~ constant value section~~s~~ or said lower constant value section of ~~that~~ the other signal is ~~are~~ in each period symmetrically shortened by a predetermined second time interval during which such ~~said~~ second modified signal has a fourth ~~different~~ constant value that is smaller than ~~from the~~ said upper constant value and bigger than said lower constant value, thereby suppressing a second set of odd higher harmonics in ~~constant value sections of~~ said second modified signal.

Claim 14 (Currently Amended): The method according to claim 13, wherein said fourth constant value is ~~second modified signal has value of~~ zero during said predetermined second time interval.

Claim 15 (Currently Amended): The method according to claim 13, wherein said predetermined second time interval is selected so that the second set of odd higher harmonics include the 5th harmonic of said second modified signal ~~is suppressed~~.

Claim 16 (Previously Amended): The method according to claim 15, wherein said predetermined first time interval equals to about $\pi/10$.

Claim 17 (Currently Amended): The method according to claim 10, wherein said third constant value is ~~first modified signal has a value of~~ zero during said predetermined first time interval.

Claim 18 (Currently Amended): A device for measuring of an electrical complex impedance of an object, comprising:

first generator for generating an excitation signal, wherein the excitation signal is modified rectangular wave signal, wherein the excitation signal has constant value sections, that are shortened by a first time interval during each half period of the excitation signal to suppress a first set of odd higher harmonics of the excitation signal;

second generator for generating a reference signal, wherein the reference signal is modified rectangular wave signal, wherein the reference signal has constant value sections, that are shortened by a second time interval during each half period of the reference signal to suppress a second set of odd higher harmonics of the reference signal; and

a synchronous detector, having a first input, and a reference input, wherein the excitation signal is applied to an input of the object, a response signal is received from an output of the object through the first input of the synchronous detector, and the reference signal is applied to the reference input, wherein an output signal of the synchronous detector is proportional to the electrical complex impedance of the object and is free of said first set and said second set of higher harmonics.

Claim 19 (Previously Amended): The device according to claim 18, wherein a phase shift between the excitation signal and the reference signal is 90°.

Claim 20 (Previously Amended): A device for measuring of an electrical impedance, of an object, comprising:

an in-phase and a quadrature measurement channels;

a generator of driving signals;

a circuit of an excitation signal, the output of which is connected to an input of the object, wherein first and second outputs of the generator of driving signals are connected to inputs and of reference circuits of synchronous detectors , wherein the generator of driving signals comprises a generator of quadrature signals and two formers of the bipolar rectangular signals;

the circuit of the excitation signal comprises a device for generating a shortened pulse , the control input of which is connected to the output of the auxiliary signal of the generator of quadrature signals, the input is connected to the output of the former of the bipolar rectangular signal, and the output is connected to the input of the bio-object ;

the reference voltage circuit of the synchronous detector of the in-phase measurement channel comprises a device for generating of shortened pulse is introduced, the control input of which is connected to the output of the auxiliary signal of the generator of quadrature signals, the input is connected to the output of the former of the bipolar rectangular signal, and the output is connected to the reference input of the synchronous detector;

the reference circuit of the synchronous detector of the quadrature measurement channel comprises a device for generating of shortened pulse, the control input of which is connected to the output of the auxiliary signal of the generator of quadrature signals, the input is connected to the output

of the former of the bipolar rectangular signal, and the output is connected to the reference input of the synchronous detector.

Claim 21 (Previously Amended): The device according to claim 20, wherein the generator of quadrature signals comprises a shift register of predetermined bit length and the quadrature triggers.

Claim 22 (Previously Amended): The device according to claim 21, wherein the switching multiplier in the synchronous detectors is implemented on the basis of digital techniques.

Claim 23 (Previously Amended): The device according to in claim 20, wherein the synchronous detectors are implemented on the basis of an analog multiplier.

Claim 24 (Previously Amended): The device according to claim 20, wherein the synchronous detectors are implemented on the basis of a switching multiplier.

Claim 25 (Previously Amended): The device according to claim 23, wherein the switching multiplier in the synchronous detectors is implemented on the basis of mixed signal analogue /digital techniques.

Claim 26 (New): The device according to claim 1 wherein said third constant value is about approximately an arithmetic average of said upper constant value and said lower constant value.